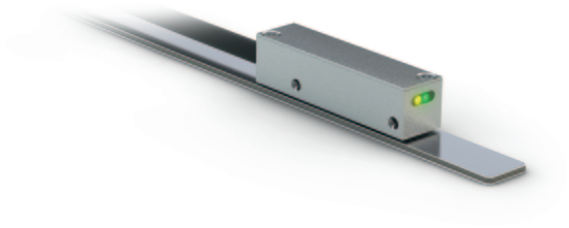
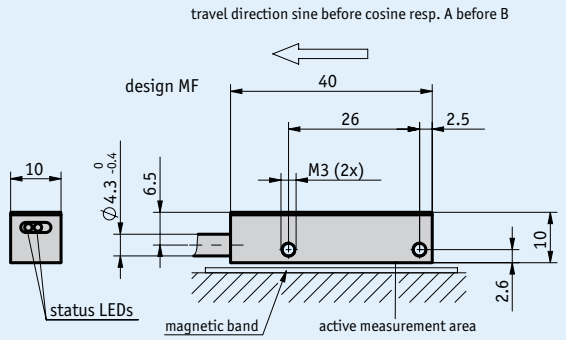
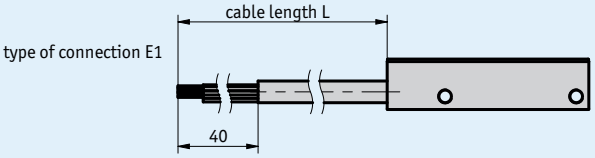
Profile

- Repeat accuracy max. ±2 µm
- Max. resolution 0.2 µm (LD output circuit)
- Reading distance 0.4 ... 0.5 mm
- Works with magnetic tape MB200/1
- Signal period 2000 µm
- Output circuit sin/cos or LD
- Function and status display LEDs







Mechanical data

Feature	Technical data	Additional information
Housing	zinc die-cast	
Sensor/band reading distance	0.4 ... 0.5 mm	
Cable sheath	PUR, suitable for drag-chain use	8-core ø4.3$_{-0.4}$ mm
Cable bending radius	5x cable diameter	static
	10x cable diameter	dynamic
Weight	<0.03 kg	(without cable); cable 0.028 kg/m

Electrical data

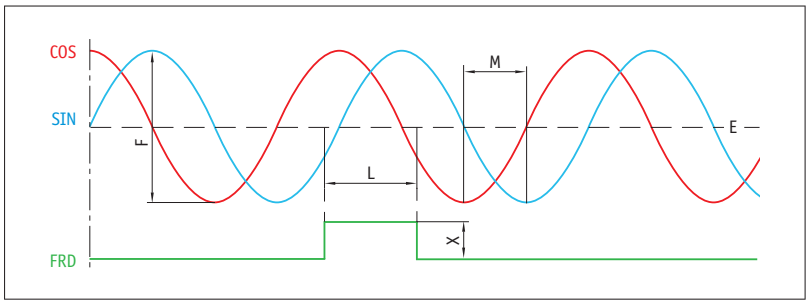
- **Sin/cos output**

Feature	Technical data	Additional information
Operating voltage	5 V DC ±5 %	reverse polarity protected
Current consumption	<50 mA	off-load
	<100 mA	loaded
Status display	2 LEDs (yellow/green)	
Output signals	sin, /sin, cos, /cos, index, /index	
Output voltage	1 V_{PP} ±10 %	at 0 ... 70 °C, 120 Ω teminal resistance
Signal period	2000 µm	
Offset voltage	UB/2 ±100 mV	sine/cosine mean to GND (5 V DC)
Phasing	90°±1°, ±3° (20 kHz)	sin/cos
	45°	sin (reference signal)
	135°	cos (reference signal)
Pulse width of reference signal	180°±40°	
Real-time requirement	speed-proportional signal output	
Type of connection	open cable end	

LD output circuit

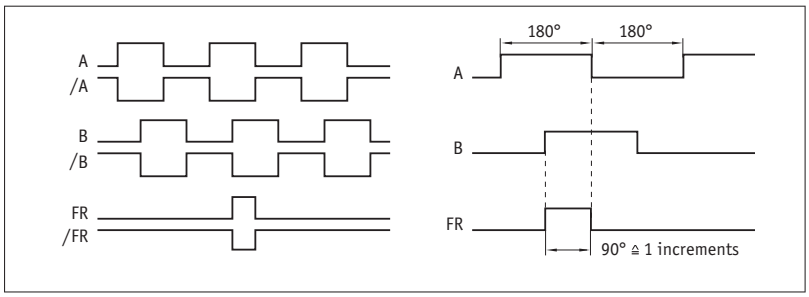
Feature	Technical data	Additional information
Operating voltage	5 V DC±5 %	reverse polarity protected
Current consumption	<50 mA	no load
	<120 mA	loaded
Status display	2 LEDs (yellow/green)	
Output circuit	LD (RS422)	
Output signals	A, /A, B, /B, FR, /FR	
Output signal level high	>2.5 V	
Output signal level low	<0.5 V	
Pulse width of reference signal	1, 2, 4 increment(s)	
Real-time requirement	speed-proportional signal output	
Type of connection	open cable end	

Signal pattern, Sin/Cos output



E: reference voltage 5 V
F: 1 V_{SS} ±10 %
L: 180° ±40 %
M: 90° ±1.0° / ±3° (25 kHz)
X: 1 V_{SS}

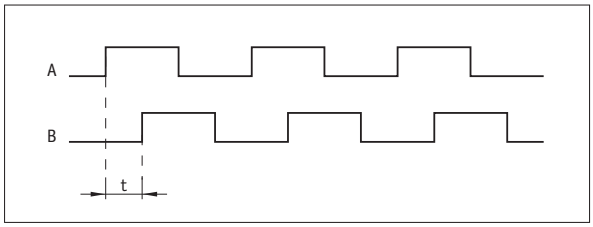
Signal pattern, LD output circuit



The logic status of signals A and B is not defined regarding the reference signal FRD or FR. It may deviate from the signal pattern.

Reference or index signal with 4 increments (360°) signal length is only valid from the 5th counting step onwards. A corresponding delay should be taken into consideration after switching on the operating voltage.

Pulse interval, LD output circuit



Example: Pulse interval t = 1 µs
(i. e., the downstream unit must be able to process 250 kHz)

Formula for counting frequency $= \frac{1}{1\ \mu s \times 4} = 250\ kHz$

System data

Feature	Technical data	Additional information
Pole length	2 mm	
Resolution	0.2, 0.4, 1, 2, 4, 10, 20 µm	LD output circuit
System accuracy	±(0.015 + 0.01 x L) mm, L in m	at TU = 20 °C
Repeat accuracy	±2 µm	unidirectional
Measuring range	∞	
Travel speed	≤25 m/s Sin/Cos output	≤5 m/s referencing speed
	≤25 m/s	LD output circuit, see table, ≤5 m/s referencing speed

Travel speed, LD output circuit

		Travel speed Vmax [m/s]						
Resolution [µm]	**0.2**	0.80	0.64	0.32	0.16	0.08	0.04	0.02
	0.4	1.60	1.28	0.64	0.32	0.16	0.08	0.04
	1	4.00	3.20	1.60	0.80	0.40	0.20	0.10
	2	8.00	6.40	3.20	1.60	0.80	0.40	0.20
	4	16.00	12.80	6.40	3.20	1.60	0.80	0.40
	10	25.00	25.00	16.00	8.00	4.00	2.00	1.00
	20	25.00	25.00	25.00	16.00	8.00	4.00	2.00
Pulse interval [µs]		0.20	0.25	0.50	1.00	2.00	4.00	8.00
Counting frequency [kHz]		1250.00	1000.00	500.00	250.00	125.00	62.50	31.25

Ambient conditions

Feature	Technical data	Additional information
Ambient temperature	-40 ... 85 °C	
Storage temperature	-40 ... 85 °C	
Relative humidity	100 %	condensation admissible
EMC	EN 61326-1	immunity requirement of industry
	EN 61000-6-2	class B emission limit
Protection category	IP60	EN 60529
Shock resistance	≤500 m/s^2, 11 ms	EN 60068-2-27, half-sine, 3 axes (+/-), each 3 pulses
Vibration resistance	≤100 m/s^2, 10 ... 2000 Hz	EN 60068-2-6, 3 axes, each 10 cycles

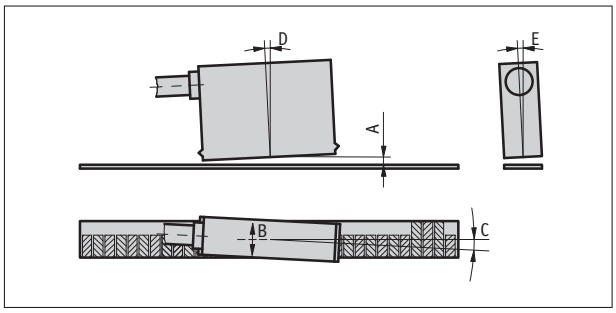
Pin assignment

Signal Sin/Cos	Signal LD	Cable color
Sin	A	red
Cos	/A	yellow
FRD	FR	blue
+UB	+UB	brown
GND	GND	black
/Sin	B	orange
/Cos	/B	green
/FRD	/FR	violet

Hint for mounting

For systems with reference points on the magnetic tape please take care that sensor and tape are correctly aligned (see picture).

Reference signal	FR, FRD
A, Sensor/tape reading distance	0.4 ... 0.5 mm
B, Lateral offset	±0.5 mm
C, Alignment error	±3°
D, Longitudinal inclination	±1°
E, Lateral inclination	±3°



Symbolic representation

Order

Ordering information

One or more system components are required:

Magnetic band MB200/1 www.siko-global.com

Ordering table

Feature	Ordering data		Specification	Additional information
Cable length	...	A	01.0, 02.0, 03.0 in m	
Output circuit	1Vss	B	Sin/Cos, 1 V_{SS}	
	LD		Line Driver	
Resolution		C	no information required	only with output circuit 1Vss
	...		0.2, 0.4, 1, 2, 4, 10, 20 in µm	
Pulse interval		D	no information required	only with output circuit 1Vss
	...		0.2, 0.25, 0.5, 1.0, 2.0, 4.0, 8.0 in µs	

Order key

LEC200 - MF - E1 - [A] - [B] - FR - [C] - [D]

Scope of delivery: *LEC200, Quick Start Guide*

Accessories:

Flexible reference mark *Order key 88678*